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Townshend Hall.

THE OHIO DAIRY SCHOOL.

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Class in Dairying, 1899. Ohio State University.

The Winter Course in Dairying.

The University, . .

The Ohio State University is divided into six colleges as follows:
The College of Agriculture and Domestic Science.
The College of Arts, Philosophy and Science.
The College of Engineering.
The College of Law.
The College of Pharmacy.
The College of Veterinary Medicine.

The College. . .

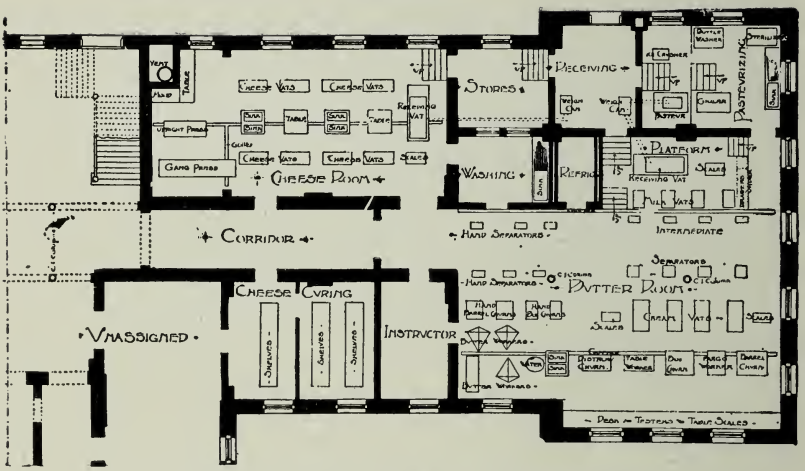
The College of Agriculture and Domestic Science offers six distinct courses of study:

1. A four years' course in Agriculture.
2. A four years' course in Horticulture and Forestry.
3. A four years' course in Domestic Science.
4. A two years' course in Agriculture and and Horticulture.
5. A two years' course in Domestic Science.
6. A one term course in Dairying.

Bulletins of any of the above colleges or courses will be sent upon application to the President of the University.

The Course in Dairying. . .

This pamphlet is designed to give a brief outline of the winter term course in Dairying which begins its sixth annual session on Wednesday, January 3rd 1900, and continues ten weeks. This special course in dairying is established to



Floor plan of Dairy Laboratory. Townshend Hall.

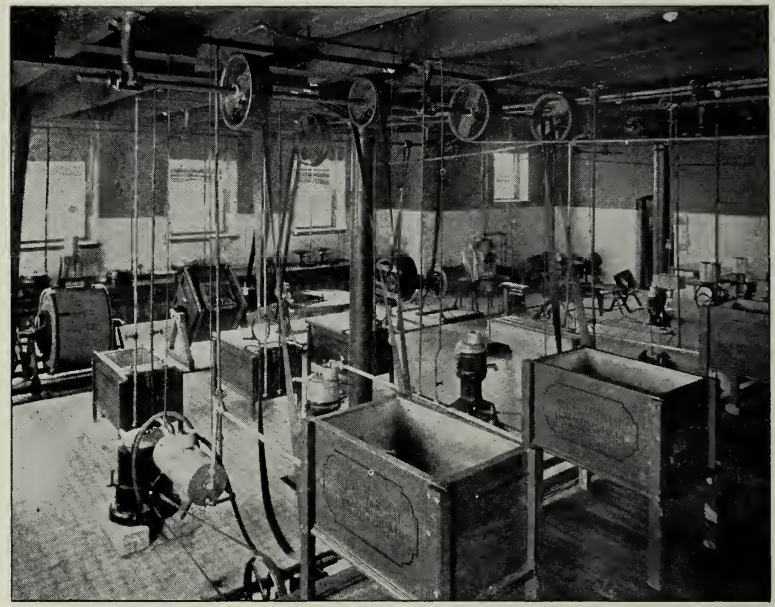
meet the wants of those who have neither the time nor means for the above extended courses. It is designed especially for those who are desirious of mastering the art of butter and cheese making or who wish to become fitted for the position of manager or superintendent of a creamery or cheese factory. Young men who are interested in general live stock farming may get much from this course that will be helpful to them, although if they have the time for it, the fuller courses of the College of Agriculture would be more desirable. The students who have taken the special course in dairying heretofore, have usually been quite successful and the outlook in this line for those who will properly prepare themselves was never better than at the present time.

Equipment. . .

The work in butter and cheese making and testing milk as well as the lectures in dairying and the chemistry of milk and upon the feeding, breeding, judging, and management of cattle, will be given in Townshend Hall, the new Agricultural Building which the University has erected and equipped at a cost of about $100,000. Townshend Hall is 260 feet long and varies in width from 64 to 78 feet. Its size is best comprehended from the statement that it is more than one-eighth of a mile around the building.

The Dairy Department or Laboratory occupies six thousand square feet of floor space on the ground floor (as shown on page 4), not including bath room, locker room, toilet room, and class room. The Dairy Department proper consists of a butter making room (See page 6), cheese making room (See page 8), bottling and sterilizing room; receiving room; store room; wash room; refrigerator room; and two cheese curing rooms. One of these cheese curing rooms is specially insulated and is provided with refrigerating coils as well as thermostat for controlling temperature so that the light and moisture and the temperature can be under control. The idea of this room is to determine what are the proper conditions for curing cheese.

The heating of the entire building (from the University heating plant) is automatically controlled so that for example the butter making room can be kept at 60° F. or less while at the same time the cheese making room is kept at 70°



Butter Making Room. Townshend Hall.

F. or more. The illustrations on pages 6 and 8 give a general idea of the equipment of all the rooms. As will be noticed the walls are wainscoated with white enameled brick while the floors are of white and blue tile.

No handsomer or more convenient suite of rooms can be found anywhere in America for this purpose than are to be found in this building.

Detached from the main building and just opposite from the receiving room door is a boiler house which furnishes steam and power for the Dairy Department and which contains the condenser, compressor, and engine for a six-ton refrigerating apparatus used in cooling the refrigerating room, and in controlling the temperature of the cheese curing-room. In the south end of this building is a live-stock lecture room about forty feet square. One third of this room is occupied by raised seats, the remaining floor space being used for exhibiting and judging livestock. Connected with this is a room fitted with stalls for the temporary accommodation of live stock needed for class room exercises. In this end of the building also are located the locker and bath rooms. The class rooms are on the floors above.

The lectures and laboratory work on the bacteriology of milk will be given in the new biological building, a handsome two-story structure which has been erected and equipped at a cost of about $40,000.

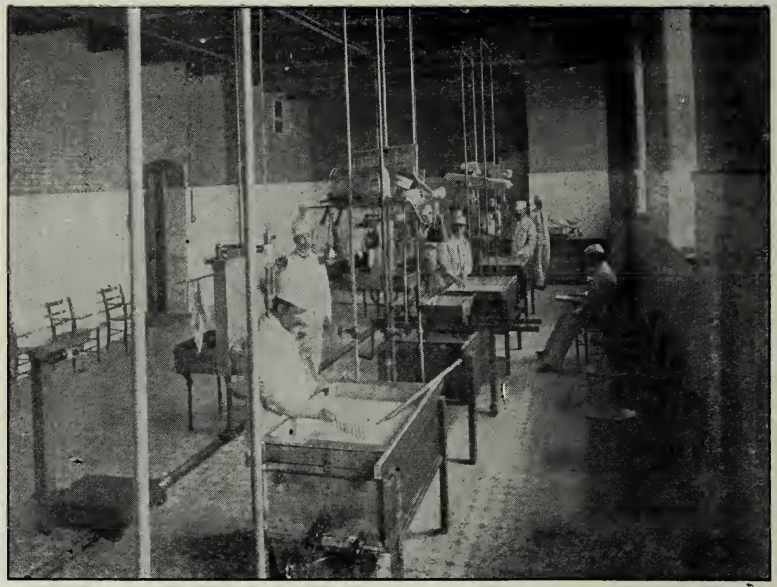
This building is very fully equipped for the study of Dairy Bacteriology. See illustration of one of the class rooms on page 16.

The Veterinary Hospital and the farm stables furnish illustrations for the lectures on breeding, judging, management and diseases of cattle.

Butter and Cheese Making. . .

Associate Professor Decker, Assisted by Mr. B. B. Herrick, Mr. Elisha Smith, and Mr. D. A. Crowner.

In this course a considerable part of the time is given to the laboratory or dairy room practice. This consists in testing milk as to purity, contents of butter fat, the use and care of centrifugal separators of different makes and other creamery and dairy devices, the making of butter and cheese by the most improved



Cheese Making Room. Townshend Hall.

methods. In a word, all the essential operations of the creamery, factory, or home dairy, are repeatedly performed under the guidance and direction of the instructors until some degree of proficiency is attained. Neither is the student allowed to do this work by the rule of thumb. He is required to follow the milk from the time it enters the laboratory until the finished product leaves it, and to determine the points in the process where losses occur and the reason therefore. The saving in the loss of butter fat that can be effected by one thus trained will in any ordinary creamery more than pay his salary as compared with those who have not been properly trained.

Butter and Cheese Making. . .

Associate Professor Decker.

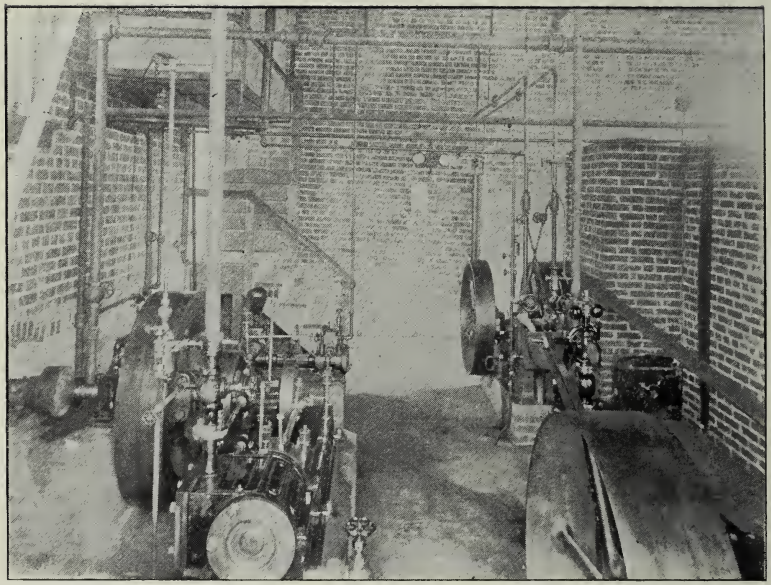
There are lectures and recitations on methods of creaming; factors which control the thoroughness of separation, either by gravity or centrifugal force; explanations of the continuous separation of cream; of ripening cream and testing for acidity; on the philosophy and methods of churning; the effect of temperature, acidity and richness of cream on time and completeness of churning; on the salting, working, packing and marketing of butter; on the fermentations of milk as affecting cheese making; on the curd test for the detecting gassy or bad flavored milk; on the rennet test; on the cutting, heating, milling, salting and pressing of the curd; on the curing and shipping of cheese; on the judging of butter and cheese and the pasteurizing of milk. There are also lectures upon the construction, equipment and operation of creameries, cheese factories, dairies and milk depots. Each student is required to draw a plan of a dairy, a creamery or a cheese factory and prepare an estimate for the equipment of the same.

The Chemistry of Milk, Butter and Cheese. . .

Professor Weber.

The work upon this subject embraces the following:

A brief outline of the principles of chemistry and chemical nomenclature, the chemistry of carbon, hydrogen, oxygen, nitrogen and of ten other elements occurring in milk; the microscopical examination of milk, cream, and skim milk;



Boiler Room, containing Power and Refrigerating Apparatus.

the chemical composition of milk; the relation of specific gravity, total solids and fats to each other, the optical methods of testing milk, as Haeren's method, Feser's method, etc.; Babcock's method of testing milk, cream and cheese; description and use of lactometers and creamometers.

Bacteriology. . .

Professor Bleile.

In this subject the instruction is given both by lectures and laboratory work. The student is first taught the general facts concerning bacteria and their relation to life processes. This is followed by lectures on their special application to milk, butter and cheese.

In the laboratory the students learn to prepare culture media, to make cultures and study them, and to estimate the number of bacteria in water, milk and air. Stress is laid upon the methods of pasteurization, sterilization and purification.

Care of Steam Engines and Boilers. . .

Professor Magruder.

The object of this subject is to give the student a knowledge of the theory of the generation and use of steam and as much practice in the operation of a steam power plant as time will permit. The student is instructed on the physics of steam, on the mechanics and mechanism of steam engines and steam pumps and on the technical names and uses of the various parts of a boiler, engine, pump and injector. This class room work is accompanied by demonstration of the best practice in handling and caring for a steam engine and boiler; ways of firing the boiler and feeding it from a steam pump and injector; on starting, stopping and oiling the engine; on packing the piston and valve rods; on setting the valves and adjusting the bearings. Students are detailed in the boiler house in Townshend Hall in the actual care and charge of the boiler, engine, pumps and refrigerating machine.

Live Stock Lecture Room. Townshend Hall.

The Diseases of Cattle. . .

Professor White.

The lectures on this subject consist of the following:

1. The anatomy of the cow with special reference to the digestion, reproduction and milk-producing organs.
2. The more common non-infectious diseases and their treatment.
3. Some of the most important infectious and contagious disease of cattle and the methods of dealing with them.
4. Practical methods of confining and controlling cattle during operations, casting, etc., etc.,

Dairy Farming. . .

Professor Hunt.

Under this subject there are lectures upon the history, adaptation, care and management of different breeds of dairy cattle. By means of the score card with the animals before them, the students are taught to judge animals for dairy purposes. There are lectures on the principles of breeding and the student is required to trace and expand pedigrees and to understand the methods of recording animals as practiced by different breeders' associations. There are lecturers upon the character of food stuffs, the relation of the food to the animal, and the kind and quantity of food for the best milk production. The students are required to calculate digestibilities and nutritive ratios of different foods and to arrange therefrom proper feeding rations.

Requirements for Admission. . .

Any person, man or woman, who has a good common school education can enter the dairy school. The better the previous education the better the results.

Candidates must be at least fifteen years of age, and, unless they are twenty-one years old or over, must pass an examination in arithmetic, geography, gram-

Veterinary Lecture Room. Townshend Hall.

mar and United States history, or bring High School or other certificates for these branches. A teacher's or Boxwell certificate will be accepted. Applicants who are twenty one or over are admitted without examination.

Expenses. . .

College Dues.—Each student is required to pay an incidental fee of five dollars and a laboratory fee of ten dollars.

Other Expenses.—Books and stationery willl cost from three to five dollars and two white duck suits to wear in the dairy laboratory will cost one dollar each.

Rooms and board may be secured at the Dormitory on the University grounds, or in clubs and private families. The rates vary from $3.25 to $4.00 per week. The total expenses for the term, including fees, board, room and books, etc., need not exceed sixty dollars and may be less. Any young man of ordinary ability can earn enough more the first season to more than pay the total expenses of the term.

Location. . .

The buildings of the Ohio State University are on the south-east portion of University grounds, which front east on North High Street, in the city of Columbus, and extend from Eleventh Avenue on the south to Woodruff Avenue on the north. The campus and farm contain three hundred and forty-five acres.

For further information concerning the course in Dairying, or other work of the College of Agriculture and Domestic Science, write to the Dean of the College of Agriculture and Domestic Science, Ohio State University, Columbus, Ohio. For general information concerning the University, address Executive Office, Ohio State University, Columbus, Ohio.

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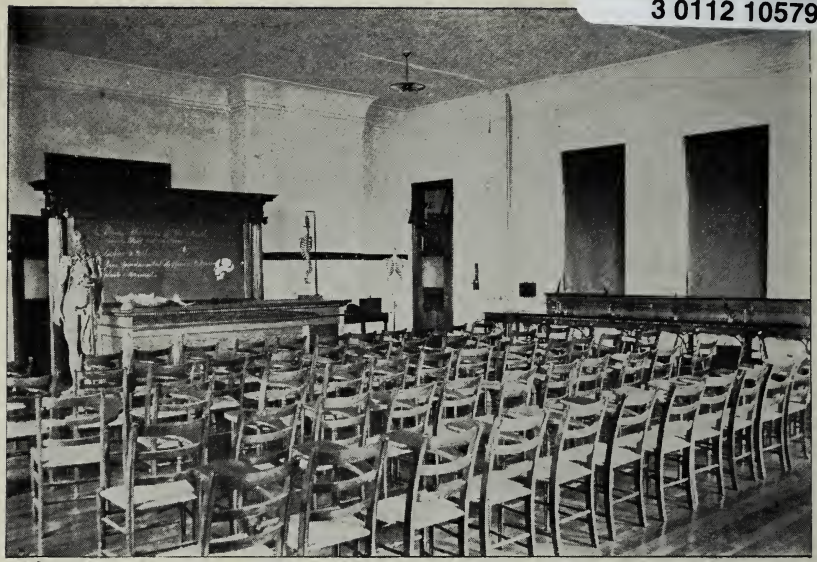

Physiological Lecture Room. Biological Hall.